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VETERINARY JOURNAL

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Editorials.

THE NEW "DANGEROUS DRUGS ACT."

A CONSIDERABLE amount of alarm, judging from communications received, appears to exist in the minds of a large number of the profession, that the new "Dangerous Drugs Act" is likely to affect the liberty of a qualified veterinary surgeon in the matter of prescribing, or even using, cocaine, morphia, heroin, and certain other drugs which have figured so much lately in the public Press on account of the improper uses to which they have been put.

No alarm need, however, be entertained that the situation has been missed, as the Council and the Ministry of Agriculture have the matter well in hand, and the profession can rest assured that they will have the same treatment in regard to the use of these drugs as is accorded to the practitioner in human medicine.

Restriction upon these "dangerous drugs" was necessary, and it was high time that it should be made. The qualified practitioner, whether veterinary or medical, will have to obey certain regulations,

but the drugs will be obtainable by him for any legitimate purpose.

To the quack the Act may prove a bugbear ; for cocaine, unless he be specially licensed, will only be obtained in certain roundabout ways ; and as (if he operates at all) he is legally bound (or supposed to be) by the Animals Anæsthetic Act, to use an anæsthetic for a certain scheduled list of operations, he will have to forswear that drug and learn the use and dosage of some of its various synthetic substances.

DISEASES COMMUNICABLE FROM ANIMALS TO MAN.

In this issue we publish a very interesting abstract from the *Journal of the Royal Army Medical Corps* on "Cats and Human Diphtheria," in which the author asserts that "the evidence brought forward from the association of human diphtheria cases with cases of illness amongst cats whose throats are said to show diphtheria bacilli must be regarded as valueless in almost every case." We also publish another abstract from *The Lancet*, in which it is stated that cats are carriers of virulent diphtheria bacilli, and are thus a danger to human beings. Thus do medical opinions differ. They are especially interesting just now in view of the fact that a combined and well-attended meeting of the Royal Institute of Medicine and the Central Veterinary Society was held recently in London, the subject of the lecture being "Observations on some Diseases Communicable from Animals to Man." A number of diseases were alluded to, but special emphasis was drawn to those which, if stamped out in animals, would not exist in man. Of particular importance in this category were glanders, anthrax, rabies, foot and mouth disease, and certain varieties of mange and ringworm. Their existence emphasises the importance of the medical and veterinary professions working together hand in hand, and shows, too, the value of the practice of scientific veterinary pathology as a bulwark to lessen the number of human diseases.

Taking glanders as an illustration. This disease always has its origin in an animal of equine or asinine origin, and once it is completely stamped out of the equine species its danger will be completely done away with as regards mankind. Its only origin then could be the pathological laboratory. Veterinary science can claim priority in the prophylaxis and diagnosis of this disease, for by the use of mallein as a diagnostic agent, and the application of common sense methods after its use, the number of cases of glanders has been reduced from 2,370 animals in 1901 to 31 in 1920, and this, too, after the sale of some 150,000 Army horses and mules which had been gathered together from various countries, and employed in the work of the greatest war the world has ever known.

There is every reason to hope that this year or the next will see glanders stamped out of Great Britain altogether. It would be good if anthrax could be placed in the same category, but here we have a more difficult problem, mainly on account of the importation trade in hides, hair, calves and other foodstuffs, and manure. Rabies and foot and mouth disease were once "cut out," and it is unfortunate that they have ever made their presence felt again. However, they are only here temporarily, as the vigilance of the Veterinary Department of the Ministry of Agriculture has effectually prevented the spread of either, and confined their respective ravages and inconvenience to local areas.

Mange and ringworm have each their own genera which affect mankind by transmission from other humans, but the mange and ringworm of all animals are transmissible to man, and once stamped out from the veterinary world will remove one more anxiety from the shoulders of the medical practitioner.

The fact that diseases exist capable of communicability from animals to man makes it more and more imperative that the medical and the veterinary worker shall go hand in hand, and not conduct their scientific researches in separate and watertight compartments.

THE CONQUEST OF RINDERPEST IN BELGIUM.

At last veterinary authorities in control of the Belgian Veterinary Sanitary Service are able to breathe more freely in the hope that they are once again free from rinderpest. Their successful efforts mean the salvage and economy of millions of francs, for had this dread disease spread unchecked, it would have spelled ruin to agriculture and been a terrible menace to the civilised continent of Europe. The congratulations of our profession are forwarded in all sincerity to our Belgian *confrères* on the success which has attended their efforts and their skill.

General Articles.

CATS AND HUMAN DIPHTHERIA.

Dr. W. G. Savage, C.M.O.H. for Somerset, has been at some pains to determine for himself whether there are any grounds for the "belief amongst medical men, particularly those who are medical officers of health, that cats may suffer from diphtheria, and convey it to human cases, and that they are a not uncommon source of infection." Dr. Savage presents an account of his investigations to the

Journal of Hygiene for February, 1920, pp. 448-462, and arranges his article as follows :—

(1) Account of available evidence upon which the association of cats with diphtheria has been built.

(2) Summary of his own investigations.

(3) Critical considerations of the whole of the data available.

The evidence reviewed in the first section is both experimental and epidemiological.

I. HISTORICAL EVIDENCE : (*A*) *Experimental.*—The work of Klein in 1888, 1889 and 1890 is chiefly discussed as being " the most considerable in volume and of most importance as regards its influence upon contemporary and later medical opinion."

As a result of inoculating cats and kittens subcutaneously and intravenously with pure cultures of diphtheria bacilli, death followed in the majority of cases, and the post-mortem changes were considered by Klein as " extremely characteristic of diphtheria disease in the cat." These changes were chiefly noticed in the kidneys, and were as follows :—

Enlargement of the whole organ ; almost entire cortex grey and in a condition of fatty degeneration ; medulla by contrast much congested ; swelling of uriniferous tubules ; extensive fatty degeneration of epithelium.

As regards feeding experiments, one kitten and two cats fed by Klein with agar cultures in milk remained well, but two other cats which were fed in the same way on three separate occasions became very thin, though showing no other symptoms, and were killed three or four weeks after the beginning of the experiment. Klein considered that these animals showed post-mortem changes similar to those that obtained in the case of the inoculated cats, and wrote : " From these experiments it is seen that by *repeated* feeding with cultures of diphtheria bacilli, distributed in milk, unquestionable diphtheria disease can be produced in the cat." But, as Dr. Savage remarks here, " not the slightest bacteriological proof is given or evidence supplied of the presence of any clinical or pathological features of diphtheria."

From post-mortem appearances, especially in the kidney, Klein also diagnosed cat diphtheria in animals, which he considered were accidentally infected from human cases.

Renshaw (1885), in 1874, administered diphtheria membrane from human cases to a number of cats, most of which became ill and died and were found with diphtheric membrane on the fauces, bronchial tubes, etc.

Welch and Abbott (1891) inoculated into the trachea of a half-grown kitten a platinum loopful of pure diphtheria culture. The animal died on the third day, and diphtheria bacilli were found in the membrane which had appeared in the trachea and larynx. No other remarkable lesion was found " unless it be a greater degree of fatty metamorphosis of the renal epithelium than is normal in kittens."

(*B*) *Epidemiological Evidence.*—The author gives particulars of a number of cases which may be condensed as follows :—

Turner (1886), apparently the first observer to report the association of illness amongst cats with cases of human diphtheria.

Evidence entirely circumstantial, consisting of the concurrent presence of human cases with cats ill with swelling of the neck, foul discharge from the nose, eye inflammation, etc.

Bruce Low (1888) reported similar relationship at Enfield.

Williams (1895). In a house harbouring a human diphtheria case, three cats taken ill with wasting, loss of appetite, inability to swallow. All died. In one, Klein reported extensive disease of the lung, not uncommon among cats.

Gwynn (1893) at Hampstead. Here the cat's throat symptoms were due to an unhealed abscess.

Dowson (1895) examined a cat from a house in which fourteen days previously a child had died of diphtheria. Cultures from lung yielded pure cultures of an organism morphologically resembling the diphtheria bacillus.

Symes (1896). Kitten in close contact with a fatal case of diphtheria was subsequently attacked with vomiting and diarrhœa, slight swelling of neck and with patches of yellow exudation on the fauces. These patches extended, and the cat finally died, but was buried without a post-mortem.

Barras (1905). Illness in cats attached to two houses in Govan, where diphtheria had occurred. Micro-organisms isolated from the throats of these cats were found to correspond in every respect to those of the human diphtheria bacillus. No details of symptoms, and no account of the bacteriological technique are given. A stray cat which had found a home with one of the affected families was found to be suffering from post-diphtheritic paralysis of hind legs.

Porter (1903) obtained organism from the fur of a cat living in a house where there were several cases of diphtheria, and these bacilli were identical in appearance (Methylene Blue and Neisser's) with the Klebs-Löffler bacillus.

Mapleton (1913). During an outbreak of diphtheria at the Cottage Home, Newton Abbott, three cats were bacteriologically examined and two were found infected. The bacilli were not isolated in pure culture,

and no inoculations into animals were made. The cats were not ill.

Webb (1914) reported an outbreak of illness among cats at Leigh (Lancs.) which seemed associated with a case of diphtheria in a child. The cat belonging to the house which contained the human case of diphtheria had been ailing for over two weeks, had a peculiar cough, could not miaul properly, refused food, was very thin, and could hardly move. During the previous week two cats presenting similar symptoms had died in neighbouring houses. The throat of the first cat was in a dirty and sloughing condition and cultivations showed " a bacillus having the characteristics of the K.-L. bacillus." Organism not isolated in pure culture, and no cultural or inoculation tests.

Five other cats in same street were found to be ailing and were destroyed.

Priestly (1915) examined nine cats belonging to the Stockwell Orphanage at a time when diphtheria was prevalent in the institution. None of the cats were clinically ill, but four " carried the diphtheria bacillus." The bacilli were said to be morphologically and culturally undistinguishable from the true K.-L. bacillus, but no inoculation experiments were carried out, and apparently the bacilli were not isolated in pure culture.

II. The Author's Investigations : (*A*) *Bacteriological examination of the throat and nose of healthy cats not associated with any cases of human diphtheria.*—Eight cats and twelve kittens were the subjects of this inquiry. The method of examining consisted in taking one or more swabs in the ordinary way, and then charging at least three blood serum tubes and one agar tube in series without recharging. The usual order was one serum, one agar, one serum, one serum tube, the object being to obtain considerable dilution of bacteria in the last two tubes, so that discrete colonies could be obtained.

Result.—(1) All the twelve kittens failed to show any bacilli at all resembling diphtheria organisms. (2) Swabs from three of the cats showed no bacilli at all resembling the K.-L. bacillus.

From the remaining five cats (*i.e.*, in 66 per cent.) bacilli were isolated which to the author and the county pathologist presented no morphological differences from true diphtheria bacilli. " All of them, however (with possibly one exception), were definitely not true diphtheria bacilli."

The possible exception was a cat from a girls' school, which was twice examined, and in which on both occasions the bacillus isolated was " extremely like the true diphtheria bacillus both morphologically and culturally." The blood serum colonies, however, had a distinct yellow tinge, and the bacillus was non-pathogenic to guinea-pigs.

(*B*) *Examination of cats associated with human cases. The number of such cats examined was five.*

Result.—(1) A favourite cat, much in the room with a severe case of diphtheria, and with two children who had severe colds but were diphtheria negative.

The cat presented no symptoms. Primary films showed bacilli undistinguishable from K.-L. bacilli, but in pure culture these bacilli were far less like the true diphtheria bacillus.

(2) Cat living in close association with a woman suffering from diphtheria. Cat had no general symptoms ; throat swab showed a few bacteria suspiciously like diphtheria organisms.

(3) Cat associated with case of diphtheria. Animal remained quite well, and throat showed no bacilli like the K.-L. bacillus.

(4) Boy of eight developed diphtheria on November 22, 1916. The cat, which was continually fondled and nursed by the boy, had been " off its food " for a week previous to the boy's illness, and then showed difficulty in swallowing.

Cat swabbed December 6 : " Bacilli impossible to exclude as not K.-L. bacilli." They were only present in small numbers and on a second swabbing later no such bacilli were found.

Cat killed, and post-mortem showed no changes even in the kidneys. Swabs from throat and trachea negative.

(5) For three to four weeks previous to the removal to hospital of a bacteriological case of human diphtheria, the house cat was ill, refusing to eat, and being the subject of a discharge from nostrils and mouth. The cat had quite recovered by the time the case was sent to hospital, and six days after this event she was swabbed and then killed. There were no macroscopical changes seen at the post-mortem.

Films made from blood serum cultures showed bacilli which morphologically and culturally were K.-L. bacilli, but they were innocuous to guinea-pigs. The author thinks that in the case this bacillus " may possibly have been a non-pathogenic Klebs-Löffler bacillus."

(*C*) *Experimental Investigations with Kittens.*—Arguing that " if cats suffering from diphtheria act as carriers of the diphtheria bacillus it should be possible to infect them artificially and set up either condition," the author experiments with several kittens in which previous throat swabs had in every case proved negative.

Results.—(1) It was found impossible to infect them by throat swabbing, even with massive doses of various strains of bacilli recently isolated from acute human cases.

(2) Mixed cultures direct from human throats were innocuous even when an artificial nidus for local growth was provided by chemical or mechanical means (iodine and scarification.)

(3) Implantation of vast numbers of bacilli in nasal cavities equally ineffective.

(4) Feeding experiments equally unsuccessful; the kittens grew fat on vast numbers of the virulent bacilli.

(5) Strains which were incapable of infecting by means of throat swabbing proved highly pathogenic when injected subcutaneously. In one kitten so treated, and which died on the ninth day, all the pathological changes were confined to the kidneys and suprarenals. The kidneys were enlarged and in section showed marked cloudy swelling of the cells of the cortex and medulla, with enlargement of all the blood-vessels. The suprarenals (not mentioned by Klein) showed a condition of acute inflammation with dilated engorged blood-vessels, and swollen, turbid, indistinct cells in both cortex and medulla.

III.—Critical Consideration of Available Facts. (*A*) *Is there a Cat Diphtheria?*—(*a*) The author allows that the work of Klein and others, including himself, conclusively proves that cats are not immune to the toxins of diphtheria when these are directly injected beneath the skin or into the trachea. Also lesions are found post mortem similar to those seen in inoculated guinea-pigs. This, however, does not mean that cats suffer from diphtheria naturally any more than do guinea-pigs. (*b*) "The evidence brought forward from the association of human diphtheria cases with case of illness among cats whose throats are said to show diphtheria bacilli must be regarded as valueless in almost every case: because"—

(1) In all the recorded cases, the diagnosis rests entirely upon a purely morphological similarity between the isolated bacillus and the true Klebs-Löffler bacillus.

In the author's experiments also it was shown that, in no less than 66 per cent. of normal cats, bacilli were isolated which closely resembled true diphtheria bacilli, and the differentiation of which was impossible without isolation and study in pure culture.

(2) The fact that cats may be ill is no real evidence for suggesting that the human and cat conditions are related.

The author quotes two authors who have described cats' illnesses, thus:—

Gray (1896): "The so-called diphtheria in the cat is a contagious disease of the cat, characterised by the presence of diphtheric membranes on the fauces, pharynx, or larynx, and due to some micro-organism not yet determined. The disease has a mortality of quite 90 per cent."

Gofton (1913): "The kidney condition described by Klein as pathognomonic is an exceedingly common condition of the cat's kidney. Affections presenting diphtheritic characters are met with in the cat and occur independently of human diphtheria, but the bacteriological investigations of these infections has up to the present always resulted in failure to demonstrate the presence of the human bacillus."

(*B*) *Are Cats carriers of Diphtheria?*—The author contends that far from cats being able to act as carriers, it would appear from his experiments that the mucous membrane of these animals is particularly inimical to these bacilli.

Dr. Savage sums up his paper as follows: "I am of opinion that, the common and widely accepted view that cats can suffer from a naturally acquired disease caused by the diphtheria bacillus is entirely without foundation."—*Journal of the Royal Army Medical Corps*, December, 1920.

REMARKS ON THE BELFAST REPORT ON METHODS OF KILLING ANIMALS FOR FOOD.

By R. O. P. PADDISON

(*Hon. Humane Slaughtering Adviser to the R.S.P.C.A.*).

The demonstration which forms the subject of this Report, which was published in the February VETERINARY JOURNAL, was the outcome of a recent campaign on the part of the Ulster Society for the Prevention of Cruelty to Animals for the adoption of the humane method of slaughter at the abattoir; to this the Master Butchers' Association and the Journeymen Butchers' Association—the latter comprising the slaughtermen—were very strongly opposed. The humane method consists in effectually stunning every animal by destroying its brain with a humane killer as a preliminary to slaughter. The methods of the abattoir are as follows: Horned cattle (beasts) are first stunned with a hammer or a poleaxe, and then slaughtered. Pigs are first stunned with a heavy balled mallet of lignum vitæ. Sheep, of which larger numbers are slaughtered than all other animals put together, are slaughtered in Belfast in the customary way, without previous stunning.

The associations referred to maintained that the humane method injured the meat, and that the methods customary in Belfast were not cruel. The object of the demonstration and of the investigations and

report of Prof. Symmons and Capt. Barry, M.R.C.V.S., was therefore to throw some light on these points with a view to guiding the Markets Committee of the Belfast Corporation to decide what alterations, if any, should be made in the methods of slaughtering animals at the abattoir.

The Markets Committee allowed the S.P.C.A. to be represented at the demonstration, and at the request of the Society I attended, accompanied by Mr. J. R. A. Jones, M.R.C.V.S., of Gloucester, and my demonstrator, Inspector W. J. M. Dadswell. Mr. Jones examined the animals on which the humane killer was used, and found them healthy, in good condition, and in no way inferior, as far as he could judge, to the other animals. Of course we knew nothing of the diet and treatment of the animals previous to their admission to the abattoir, or whether they had recently undergone fatiguing journeys. We were told they had been forty-eight hours in the abattoir, and that all the animals intended for the demonstration had been kept under supervision, and had been fed and treated similarly. Inspector Dadswell used the humane killer, and watched the sticking, bleeding, and dressing, which were well and conscientiously done by the slaughtermen of the abattoir. The Report states that lots were drawn for the allocation of the bullocks, but in view of the findings of the Report, would it not have been better to mention when the drawing took place, and how the lots were drawn? The Ulster S.P.C.A. was represented only at the demonstration, and a request that a pathologist should be allowed to examine the meat on their behalf was refused.

Deterioration of the Meat.

Two bullocks, three sheep, and one pig were slaughtered by each of the methods under consideration. To what extent any reliable opinion can be based on such a small experiment is not difficult to determine if one bears in mind the multitude of factors which have their effect on the meat. At all previous trials for a similar purpose, a much larger number of animals were killed than on this occasion. All such tests showed that for the purposes of the meat trader the humane method was not inferior to any other, whether the animals in the latter case were stunned by a poleaxe or other implement, or whether they were slaughtered without being previously stunned. The fact that the method of testing was a novel one was an additional reason for guarding against hasty generalisation. A hint to this effect in a Report serving as a guide to many who are not so conversant with the mysteries of meat as the gentlemen who signed it would not have been out of place.

Bullocks.—According to the finding of the Report, the meat of the two bullocks stunned by the humane killer, and of one which was stunned by the hammer, began to deteriorate on the third day after slaughter, whereas a sample of meat of the other bullock stunned with a hammer is only reported as deteriorating on the seventh day, and the samples taken from the animals stunned with a poleaxe were sound on the eighth day. The difference in the keeping property of the flesh of the two animals stunned with a hammer only illustrates that other agencies were at work besides the method of slaughter. The difference between the meat of the two bullocks stunned with a humane killer and of the meat of the two bullocks stunned with a poleaxe is a more striking illustration of the same point. It is impossible to surmise what causes operated to deteriorate the meat of the animals stunned by a humane killer in three days, but there is no room for the suspicion that the method of stunning them was one of them. If humane killing had such a disastrous effect on the meat of beasts, the large number of butchers throughout this country who have adopted it would be on the road to ruin —if not ruined already. Yet they are practical business men, and no one knows better than they do that the humane killer, as compared with the poleaxe, is no hindrance to their trade. Belfast itself furnishes testimony about the humane killer which tells more powerfully in its favour than the recent experiment tells against it. In October, 1913, I arranged for a demonstration at the abattoir there, and thirty-six beasts were shot with the humane killer on the 8th and 9th. In a letter dated the 14th, the late Mr. Jordan, who was then the City Veterinarian, wrote me as follows : " I am bound to state that the demonstration was a great success. So far as I could judge, all who witnessed it were unanimous that it was a most effective and humane method of slaughter. Your men left a R.S.P.C.A. killer with me, and I shall certainly encourage the slaughtermen to use it." It is obvious by the last few words that the meat of the beasts killed in October, 1913, did not rapidly deteriorate, as it did in 1920. I refer readers to other evidence in the advertising pages of this journal which testifies that humane killing does not injure the meat. And I may remark that it is positive evidence, pointing to a definite conclusion. I suggest that the problem raised by the Belfast Report with regard to the meat of the two beasts stunned by the humane killer is not whether the humane killer injured it, but what actually did injure its keeping quality.

THE BLOOD.

The Report states that all six bullocks appeared to bleed equally well, but that the blood of the two bullocks which were shot was

darker in hue than the blood of the others. This, of course, was due to the smaller proportion of oxygen in the blood of the animal which ceased breathing most quickly. But the Report does not mention that the blood which trickled out in the later stage of bleeding was the same colour in all six animals, and equally dark in hue. This is the blood coming from the small blood vessels and capillaries of the meat.

I can offer no explanation of the very unfavourable yield of serum in one of the shot animals, and the moderate yield in the other one. British Animal Products, Ltd., used always to keep and sell the serum and in a report from the manager on the subject, dated November 12, 1917, he wrote, " We got the maximum quantities for each animal."

Sheep.—The Report states : " The keeping quality of the flesh was equally good in all six animals, also that no difference whatever was observed in the quality of the mutton in any of these six sheep." This accords with experience and is also positive evidence.

Pigs.—The summary of the Report says : " The flesh of the shot pig was not in such good condition as the flesh of the animal stunned by the mallet. But on reference to the body of the Report for further explanation, all we find is that five hours after slaughter (4 p.m.) " the carcase was not well set," also " internal fat splashed, striped red in patches, indicative of imperfect bleeding." These details are not evidence against the humane killer. There is nothing abnormal in the flesh not having well set in five hours. As to the splashing, it is well known that it occurs occasionally, no matter what the method of slaughter may be, and is usually ascribed to recent fatigue, bad diet, faulty circulation, or some inherent defect in the pig. This, I think, might have been stated in the Report.

Comparison of the Methods of Killing.

All the animals shot by the humane killer were instantaneously stunned—their eyes at once wide open and fixed, and the eye-ball insensitive. The same as to the two beasts killed by a poleaxe, one of the beasts felled by a hammer, and the pig stunned with a mallet. The other beast felled by the hammer rolled over on his back, his eyes blinking, indicative of imperfect stunning. He was probably temporarily unconscious, and quickly received a second blow, upon which his eyes were fixed. The three sheep which were killed by the customary method shut their eyes tightly and tucked themselves up on being stuck. No observations were made, to my knowledge, to ascertain the duration of consciousness, which is a very variable factor in sheep thus slaughtered.

Beasts.—The reason why the humane killer is much surer—and correspondingly more humane than the poleaxe and the hammer—is that it is much easier to use effectively and is, therefore, infinitely

less dependent on the personal qualifications of the operator. This is not mentioned in the Report, but it is the essence of the case.

The Report speaks of all the men who stunned the animals as "experts." Inspector Dadswell would be the first to disclaim being an expert with a humane killer, as he is no more expert to-day than on the first day he used one. To give the idea—as the Report would do—that the right use of the humane killer requires skill and practice as the right use of the poleaxe does, is quite misleading.

Sheep.—The Report says: "The shot sheep were instantaneously stunned," but "between the two methods there is little to choose from the humanitarian point of view," because in the case of the sheep which were slaughtered without stunning, "unconsciousness very quickly supervened owing to failure of circulation in the brain." But do not the arteries at the back of the neck, which are not severed by the knife, maintain a supply of blood to the brain as long as any circulation continues? I have known corneal reflex persist for two minutes after a sheep had been stuck by a skilled slaughterman. The worst cruelties in sheep killing are caused by learners, as there is no conceivable way by which they can become expert other than by practice on living sheep. The sheep at the abattoir were killed by experts, as the Report states. Yet one of the sheep had to be stuck a second time before the veins were properly cut. In another case, the first attempt to break a sheep's neck was unsuccessful, and a second effort had to be made. Again, a slaughterman, after sticking a sheep, wiped his knife on the sheep's wool before proceeding to break its neck. Sheep make no noise and give little trouble in killing, but they stand in need of the blessings of the humane method at least as much as, and perhaps more than, any other animals.

Pigs.—The stunning of the pig by the mallet could not have been done better; the cruelty of the method, however skilful the operator, lies in the chance of the pig's head suddenly moving whilst the mallet is descending. No such objection exists to the use of the humane killer, as it cannot be fired until it is pressed against the animal's head, at the desired spot. The statement, in referring to the pig which was shot, "We do not consider that this animal was efficiently stunned," is difficult to understand. The eyeball was insensitive from the moment the pistol was fired until the carcase was put into the scalding vat. The City Veterinarian examined the eye when the pig was shot and said "Right," upon which it was stuck and bled. The pig bled very well indeed, after which there was certainly complete anæmia of the brain, and not merely that partial anæmia which the Report advances to bolster up the sheep-killing practices in vogue at the abattoir. The only thing unusual (but not unprecedented) about the

pig was the persistence of his nervous vitality, the muscles responding to stimulus nearly ten minutes after being bled. Surely the Report might have explained for the information of the Markets Committee that such muscular activity has nothing to do with consciousness. It can be seen in beef any day many hours after killing. But the Report says that a post-mortem examination of the head revealed that " the pig had been shot too low in the forehead. The brain substance was practically uninjured, save in the extreme forepart of that organ. The brain was covered with hemorrhage." I accept the data revealed by the post-mortem examination, but not the conclusion that the pig had been shot too low, as the data referred to reveal unmistakably that the pig had been shot just where and how he ought to have been shot. Quite the best place to shoot a pig with a humane killer is very low in the forehead, over the extreme tip of the fore part of the brain, as the bone covering is softest there. The slope of the nozzle directs the bullet upwards, causing it to traverse the brain as indicated, hence the hemorrhage. But as the bullet is only one-fifth of an inch in diameter, the brain substance is usually uninjured, except at the spot stated to have been injured, where concussion is caused by the bullet breaking through the bone.

SUMMARY.

The Markets Committee will probably make some attempt to verify the suggestion of the Report that the meat of animals shot by humane killers deteriorates so rapidly. The Report does not state that the method of slaughter was the cause, or even that the carcases concerned were a source of loss to their owners. In the latter direction we might have been given some information, seeing that the demonstration was last October. That the Report neither asserts that the method of slaughter produced the deterioration, nor suggests any reason for the deterioration only indicates that the writers of it are not sure of their ground, which is quite intelligible. I doubt whether it will ever be explained " why humane killing injures the meat," as it would be attempting to explain something false. I am also sceptical whether the owners of the carcases suffered loss or even inconvenience. It has been noticed already that one of the animals stunned with a hammer deteriorated in less than half the time taken by the other one stunned similarly. Whatever the mysterious cause which operated to deteriorate one of these animals in three days may well have operated to deteriorate the two animals stunned with humane killers within the same time. At any rate, we know on the records of extensive experience that the humane killer had nothing to do with it. It was certainly a coincidence that both the bullocks stunned by humane killer should have deteriorated so rapidly, but the coincidence was

no more remarkable than another one which occurred in connection with the demonstration. It was current talk at the abattoir in the morning that the humane killer would not be adopted, owing to high feeling which had been notoriously prevalent amongst the slaughtermen against some of its advocates. An effort, however, would be made to replace the hammer as much as possible by the poleaxe. The coincidence I refer to can be seen by anyone who bears in mind the findings of the Report.

I cannot say I am greatly impressed with the impartiality of the Report. Opinion and conclusion is much too rashly laid down, plain facts almost parodied, as in the case of the pig; the humane points about humane killing ignored and treated with contempt. The Report will be hailed in the old fastnesses of prejudice, but is no use to anyone who wants to better the animal world. Of course there is no question as to the absolute *bona fides* of the writers of the Report.

PRESERVATION OF MEAT BY COLD AND ITS VALUE.

By E. MORGAN, M.R.C.V.S., D.V.H.,
Puerto Cabello, Venezuela.

In Great Britain, as well as other countries, many of the people are prejudiced against meat which has been held in cold stores. This, to a great extent, is due to the erroneous ideas which they have about cold storage methods. Probably many of these originated when the industry was in its early stages, and not so perfect as it is to-day, and naturally then some of the products were found deteriorated in quality. This important branch of meat industry is comparatively new; nevertheless, there is hardly any other food industry which has made such rapid progress towards perfection in a comparatively short space of time. Since the outbreak of the European war, France and other countries on the continent of Europe apparently have modified their opinions to a considerable extent on the value of chilled and frozen meat to countries like their own. Since the French Government found that it was the salvation of the people during the war they have decided that cold stores are to remain, and are to play an important part in the food industry of France.

Residents in tropical countries prefer to pay a moderate price for cold storage of meat, such as beef, mutton, fowls, fish, etc., rather than to attempt cooking and eating it almost before the animal heat has disappeared.

The meat does not deteriorate from its original value, but on the other hand it improves in quality to a considerable extent, and becomes tenderer and more palatable; in other words, it ripens, not by means

of putrefactive organisms, as is often the case when game, such as pheasants, partridges, etc., are left hanging at poultry shops and larders until their different anatomical parts almost drop apart, but by pure cold air as well as the action of sarcoluctic acid. Frozen and chilled meat, for instance, is carefully handled, also the animals are examined both by ante and post-mortem veterinary inspection. No preservatives of any kind are used, also strict hygienic instructions are carried out until the meat leaves the cold stores; afterwards great care should be taken in handling the meat, as meat, when it thaws, is more liable to be contaminated on account of the moisture formed than fresh meat from newly killed animals. If sound meat is placed in cold stores where the temperatures are properly handled, one gets the meat out when needed in a more profitable condition than when it was stored. Again, if putrefied meat is placed in cold stores one gets it out in the same condition, i.e., as putrefied meat, because it is not possible to destroy putrefactive organisms by cold, but they can be held in a dormant state, but again, when exposed to the open air, seem to be more active than before. This also applies to tubercle bacteria as well as many other pathogenic bacteria when kept at freezing point.

Every moderate sized town should have cold stores; not only from a hygienic point of view is it essential, but also it would be economical. All surplus meat could be deposited at a moderate charge until actually needed. During the summer months butchers are greatly handicapped at times on account of having a quantity of surplus meat in their shops; their only method in the absence of cold stores is the brine tank. Again, during the summer months they could deposit as cold storage their surplus stock of beef and mutton until the winter months, when there is often a scarcity of fat cattle and sheep.

The question is often asked how long will meat last in cold stores without deteriorating in quality. Students of meat inspection are familiar with the answer given, that the Jackutes still feed their dogs on the meat of mammoths which have remained for thousands of years in the ice of the Lena. This obviously means that it will last indefinitely if the temperature is low enough. The danger is in allowing the temperature to rise and fall. If it should go up beyond a certain point the result often is soft meat, and soft meat, if kept only for a short period at a high temperature, means putrefied and mouldy meat when taken out of cold storage in spite of the temperature having been again reduced. Therefore it is most important that the temperature of the meat should be reduced gradually to a certain degree and then held at that point. This applies more so to chilled than frozen meat.

The following extract from the *National Provisioner* of Chicago and New York might be of interest to students of Meat Inspection.

"FROZEN MEAT IN GOOD CONDITION."

"Evidence has recently been produced which proves that meat does not deteriorate when held in cold storage for an indefinite length of time, although it is not the practice of packers to hold meat in storage except for a limited time. The letter containing this evidence was signed by Samuel Rideal, D.Sc., of London, and was addressed to Messrs. Weddel & Co., Ltd. An extract from the letter follows :—

"From the results of my examination of the hind quarter of Queensland beef which was killed in 1896, and which has been in cold store for 18 years, I am of opinion that the beef has undergone remarkably little change during that period. The analysis of the beef tea extracts obtained from this meat are very similar to those obtained from fresh English beef and from Queensland meat killed in 1897 and examined by me at that time after being hard frozen for about four months. This is an indication that the dietetic value of the meat has not been impaired by time. The fibres under a microscopic examination of samples taken from the bullock and rump appeared normal, with a few distorted filaments, such as occur in ordinary fresh meat. Statements to the effect that meat under cold storage for a longer period than a year brings about changes which render it unfit for consumption have been disproved by this investigation. The effect of prolonged cold storage has increased the extractive figures (*i.e.*, the readiness with which the beef gives up its essences in beef tea), but there is no indication of putrefaction taking place at this low temperature, and the meat, even after 18 years, was consumed without any signs of dietetic disturbance."

Clinical.

PHYSIOLOGICAL AND CLINICAL NOTES.

By MAJOR-GENERAL SIR F. SMITH, K.C.M.G., C.B., F.R.C.V.S.

THE NUMERICAL EXPRESSION OF PATHOLOGICAL LARYNGEAL SOUNDS.

THE sounds produced when any obstruction to the free passage of air to the lungs occurs are of varying degrees of intensity, yet we employ but two verbal expressions to describe them, namely, *whistling* and *roaring*. For the sound caused by certain obstructions, such, for instance, as the swollen pituitary membrane in acute glanders, some employ the expression *snoring*, but this, though well conveying an idea of the sound produced, is confusing, as the term already belongs to a physiological condition. For many years I have thought that an instrument might be invented by which the various intensities of

" whistling " and " roaring " could be reproduced and figure values assigned to them. The faintest of all pathological sounds is a slight snore such as is commonly heard when the throat begins to swell, in strangles. It often tells a tale of trouble to come, and the cautious man will not wait for nightfall before seeing that his tracheotomy tube is ready, scalpel handy, scissors and tape available. At the opposite end of the scale is a sound produced in acute asphyxia, which can be heard many yards away ; *trumpeting* is the only term which describes it. It is a loud noise such as would be produced by incompletely ligaturing the trachea behind the larynx. Between these two occur all the other sounds caused by inspiratory obstruction. If we call the minimum 1 and the maximum 10, all the intervening sounds should be capable of precise numerical expression. An instrument made on the principle of the larynx, with a mechanism for closing and opening the artificial glottis, should faithfully reproduce all laryngeal and perhaps even nasal sounds ; a graduated scale would enable each sound to be accurately expressed. Will some of our mechanical experts give us such an instrument ?

How to Study Locomotion.

A horse is walking very slowly when one second elapses from the time that any one leg leaves the ground until it again makes contact, yet during that brief period four limbs have moved. Herein lies the difficulty of watching the action of the legs at a walk. It is, however, easier to watch the movements of the limbs if we limit the field of vision to the legs alone, by cutting off the body. This may be done by holding in front of the eye a card or similar object which obliterates the body and leaves the limbs alone visible. This method may also be employed in the detection of cases of slight lameness. The most capable man may at times be in doubt as to whether the lameness is in front or behind. The trot is a simple pace to analyse, as the legs are used in pairs, off fore and near hind together, near fore and off hind. A horse slightly lame on the near fore may appear to be lame on the off hind, and we only have one rule that I know of to enable us to settle the point, *viz.* :—If the animal appears to be worse on the near fore as compared with the off hind, he is lame of the near fore, and *vice versa*. Of course, I am only referring to cases of slight lameness; very marked cases rarely give difficulty, excepting in those instances when the animal is lame not only in front but also in the diagonal hind limb. The detection of slight cases of lameness is materially assisted by limiting the field of vision as above described. I mentioned this matter many years ago, but have never heard of the method being employed. It should be especially useful for students.

A Horse "Nods" His Head at the Walk. Why?

The walk is the only pace at which the horse normally nods the head. The nodding occurs immediately after the fore limb leaves the ground and precisely corresponds with the impact on the ground of the hind foot of the same side. What is the cause of the "nod"? The shoulder is advanced by the levator humeri; the origin of this muscle from the petrous temporal bone and occipital crest would, if it were not counteracted, cause at the moment of contraction an extension of the head and neck with deviation towards the contracting side. Neither extension nor deviation occurs; on the contrary, the head is flexed and the animal "nods." This nodding, which is always present, is most pronounced when the horse is ascending a hill. I cannot think that it is a muscular movement; it appears to be an oscillation of the head. Will those who have divided the ligamentum nuchæ in fistula of the poll, observe whether nodding the head at the walk is in any way modified as a result of this operation? "Nodding" is not essential to the walking pace. If a horse be led behind a cart, in such a position that "nodding" would cause injury to the jaw, the animal can voluntarily control the movement.

Physiological and Pathological Albinism.

There are many physiological questions, requiring neither apparatus nor laboratory for their elucidation, which could be solved by the general practitioner. Several years ago the late Sir Jonathan Hutchinson drew attention to the fact that the body patterns produced by white hair were not always symmetrical, and suggested that in such cases it might be suspected that the animal was not symmetrically developed in other respects. He instanced as examples (*a*) a face patch confined to one side, and (*b*) two lateral legs white and their fellows coloured, and supposed it to be possible that this want of symmetry in colour might be associated with a want of symmetry in action or in handiness under the saddle. We cannot afford to put the question aside as unworthy of attention, though probably most of us would say they had observed no such connection. The white areas, whether over the face or the limbs, are due to an absence of pigment in the skin, *i.e.*, to partial albinism. We certainly know that a foot which is "white" is from the point of utility a very different organ from one which is "black."

The skin, feet and nervous system are all developed from the same layer of the ovum, the *epiblast*, so that Hutchinson's suggestion should not be too hastily rejected.

It would appear that the introduction of white into the body markings is the result of domestication. So far as my reading goes the wild horse has no white on the lips or face, though there may be

white about the mouth; the hoofs are black. White markings on the limbs are certainly a source of weakness, for undoubtedly the skin of the heel, which in such cases is albinotic, is more liable to "crack" in winter than that of black-legged horses. We may, I think, safely infer that white markings on the limbs are no gain, but it remains to be decided, in terms of Hutchinson's suggestion, whether, apart from cracked heels and weak, brittle feet, white limb markings are in other respects disadvantageous.

There is a rare and curious condition of local albinism, not physiological, which I have occasionally observed affecting the nostrils, muzzle, eyelids, anus, vagina, and under-surface of the tail of the horse. It can be well studied on the anus or vagina in consequence of the absence of hair. The pigment is removed in blotches, as in a form of leprosy in the coloured man. I have never known the blotches to disappear, but I have certainly thought sometimes that the area was larger and sometimes smaller than usual. Where there is hair, it turns white over the affected region. The observant practitioner could decide the relative frequency of this condition. The only point in connection with it on which I can make a definite statement is that it

gradually develops on horses not previously de-pigmented. A photograph of a case taken many years ago is reproduced ; it shows the eyelids and surrounding area affected. There is also a patch on the edge of the nostril. This animal had also a large patch on the vagina.

Few saddle horses escape the production of white patches on the back. All are due to old injuries produced by undue pressure. They may form without any actual injury to the skin being noticed, but unequal pressure is the invariable cause. Such cases must not be confused with the pathological condition above described. In days gone by a star was considered a point of such beauty that in the event of its absence one was produced artificially by strapping a piece of lead to the forehead and retaining it in position by pressure. Care had to be taken to prevent deep injury or sloughing, but carefully regulated pressure produced a " star." We frequently observe the production of white hair as caused by a tight knee-cap or even by the edge of a tight bandage ; this hair never recovers its pigment, any more than in a slight injury to the knees caused by a fall.

To sum up the above we have (1) Physiological partial albinism and (2) pathological partial albinism. Pathological partial albinism is commonly produced by pressure or injury, but in addition there is a distinct form of disease affecting horses, in which injury or pressure is not responsible for the condition of partial albinism illustrated in the above photograph.

Wounds Which Always Heal by " First Intention."

It would be interesting to learn from the pathologist why it is that any incised or lacerated wound of the skin of the eyelid or nostril of the horse will, without antiseptic measures being employed, always heal by " first intention " when the edges are brought together ; most clean cut wounds of the face will also so heal, likewise the skin of the ear, provided the cartilage is not affected. This feature enables conservative surgery to be freely practised. In the Army, lacerated eyelids and nostrils are, or were, very common. It is perfectly astonishing how a horse will succeed in lacerating the upper lid, completely through its substance, the eyeball being unaffected ; nails and hooks in the wall are common causes of injury. In the Artillery the drivers, while at stables, always wore a hook on the belt, to which portions of harness were attached for cleaning. This hook was a common cause of eyelid and nostril injury, so that an old driver always pushed it behind him when he was grooming a head and forelock. But I have seen very many wounds of the character described which defied their cause being discovered. Many years ago I had a case of a clean-cut wound running from the articulation of the jaw to the anterior edge of the masseter muscle. Not a vessel or nerve was touched, and the

most careful investigation of the box in which this horse was standing threw no light on the matter.

A lacerated, dependent eyelid or false nostril looks very unpromising, especially if a day or so has elapsed and the edges are swollen; but the practitioner can undertake their repair with the most positive certainty of union by first intention. If the wound is fresh and clean, it is brought together at once. I always used pin sutures with a figure of eight around them, just drawn sufficiently tight to bring the edges accurately together. Begin at the top, place the parts in apposition and push the pin through, taking a good hold; the pin must come through true or there will be puckering. Three sutures for the eyelid are generally sufficient; for the nostril, as many as the length of wound requires. After suturing the animal must be placed on pillar-reins for a week, but the pins can be taken out on the fourth or fifth day. To ensure success, everything depends on the animal never being left off the pillar-reins for a moment without someone being present, or for a certainty he will rub the sutures out and reopen the wound from end to end. But even in this case we need not despair. The edges are freshened with a sharp scalpel or scissors and the whole process repeated. When a torn eyelid has not been attended to for a day or so, the edges must be similarly freshened before suturing. The part requires no dressing of any kind, no washing, no antiseptic measures, yet union by primary adhesion is invariable. In the case of the ear, if the cartilage is cut the parts curl, union does not occur, and a gap is always left. If the cartilage is not damaged the skin heals by adhesion. In the cases described, the only indication of an operation having been performed is the mark made by the pins, otherwise it is difficult to believe that the part had ever been lacerated.

Hairy Fetlocks and Disease.

Why is it we persist in the production of long hair on the legs of certain breeds of heavy horses? Can it really be that the public believe in the fable of Samson and associate length of hair with strength of body? If the production of this mass of material is of any benefit perhaps some readers of this journal will enlighten me. I believe the growth to be due to the demands of fashion. From a personal point of view it is an eye-sore. It envelops the lower limbs like a dirty doormat and is quite as difficult to clean. It harbours filth and acari and is consequently productive of disease. It has one use which the physiologist can employ: it demonstrates the descent of the fetlock when the weight comes on the limb, for the hair may be seen to touch the ground.

Lameness not Necessarily due to Pain.

Lameness is not necessarily an indication either of conscious pain

or of mechanical obstruction. The lessened interest taken in horses during the last two decades may be responsible for the fact that, so far as I know, not once has the extraordinary physiological experiment of Sherrington on the decapitated cat been referred to in any discussion or paper on lameness, yet its bearing on this subject is of the deepest scientific and practical importance. A decapitated cat is unable to stand—one merely decerebrated will stand for days in whatever position the limbs are placed. If, while the preparation is lying on its side, a foot be pinched, the injured part is flexed and the other limbs at once make rapid co-ordinated movements. The animal is endeavouring to escape and holds up the injured limb, precisely as it would do in the normal condition, when it would hop along on three legs, holding up the fourth. It is quite evident that in the decapitated specimen no pain can be felt. The spinal cord is doing the work of protection automatically. Goltz removed the cerebrum from a dog. In course of time the animal was able to walk slowly and stupidly; it was a mere reflex machine, for it had lost its memory, capacity to learn, and the senses of smell, sight and pain. One day, while out at exercise, it injured its foot, and at once it went lame, hopping along with the injured foot off the ground. Applying the experiment to lameness in horses, how can we possibly affirm in the witness-box that lameness is invariably the manifestation of conscious pain? Do not these experiments bear out in a remarkable manner the attitude taken by many men of experience in our profession, who in some "cruelty" cases have affirmed that the animal was not suffering pain? When I started in practice I remember an old practitioner remarking on a case of lameness under examination "He knows how to go lame." At the time I thought he was rather evading the point, but I subsequently saw cases which reminded me of his view. Goltz's dog and Sherrington's cat have convinced me that some cases of lameness in horses may be reflex and unassociated with conscious pain.

POISONING BY IMPURE LINSEED OIL.

By HARRY PEELE, F.R.C.V.S.
(*Durham*).

The subject of this case was a cart-horse, 10 years old, to which the owner had administered a pint of linseed-oil, obtained from an oil shop, and taken from a six-gallon drum invoiced as "raw linseed oil." It was given to the horse because the animal was going to stay in the stable for the week-end, and the animal was, previous to the administration of the dose, apparently in perfect health. Twelve hours afterwards it was dead, having simply become dull and broken out into a heavy perspiration. There was no abdominal pain or other

symptom of illness. A post-mortem examination was not made.

The oil left in the bottle had a distinct odour of paraffin and was sent to a laboratory at Darlington for analysis and report.

The latter stated that it contained at least 75 per cent. of a solvent which appeared to be a mixture of resin spirit and petroleum spirit.

It was a lesson that all linseed oil for administration internally, or even for external use, should always be obtained from a chemist and be guaranteed "pure."

REPORTS ON A FEW CASES.

By G. C. LANCASTER, F.R.C.V.S.
(*Burnley*).

I.

One day this summer a small lad came to the surgery and asked if I would operate on his parrot, as it could not talk.

I could find no account of such an operation in any of my surgical books, but it was suggested to me that it would be the same as some children receive, viz., cutting the frænum of the tongue; consequently I decided to do this to the patient.

Upon opening its mouth I found that there was no distinct frænum. As the tongue was attached all the way across the ventral surface, it was a very difficult undertaking to cut it, because the bird was constantly bending its tongue over on to the sharp edge of a fine scalpel. However, the operation was eventually accomplished, and a few weeks after, whilst walking in the town, this little fellow stopped me and said: "Doctor, our parrot can now talk. It can say '*Poll, pretty poll, Poll, Poll.*'"

I was very much surprised but very pleased to hear the good news, and since then I have operated on three others and all have been successful.

II.

During the summer I have been doing a little experimental work on Roup in poultry, as there has been a large amount of it about here recently.

The temperatures varied from normal to 109.6 and in some cases the eyes were completely swollen up and closed.

Local treatment comprised bathing with a weak solution of Lysol in warm water. In some cases the following medicine was given twice a day.:—

℞.

Spt. Aetheris Nitrosi	ʒ iv.
Liq. Ammon. Acetatis	ʒ ii.
Acid. Carbolic.	*m* xx.
Aquæ	ad ʒ vi.

This was administered by means of a fountain-pen filler, each bird receiving one tubeful, but if very ill, 1½ tubesful.

My last batch of 8 White Leghorn pullets all recovered and did very well. A little pot. perman. was added to the water, and their food comprised ordinary hen wheat and a few dog biscuits soaked in water.

This formula for Roup I can recommend.

III.

At the summer holidays a little cross-bred terrier, about 10 lbs. in weight, was brought to the surgery for board and attendance whilst the owner went away on his holidays.

The owner pointed out to me two large bilateral mammary swellings which she had had some considerable time, but which the owner had been advised not to have operated upon. I just felt them and noticed they were soft, but troubled no more about them. It was put into a kennel and fed as usual, but to my surprise it was found dead one morning. I made a *p.m.* and found that these " mammary tumours " were two large inguinal hernias, each containing a horn of the uterus, which was distended with a nasty reddish fluid. Although only a small bitch, the horns were distended to about 2 inches in diameter.

It was a case of pyometritis and inguinal hernia, the cornua of the uterus having descended and become strangulated.

IV.

On November 30, 1920, a client came to me and said his horse had colic. I found a grey cob, about 15 h.h., 8 years old, in fair condition, with the usual symptoms. It had been taken ill on its way home, so he called at a veterinary surgeon's, inquiring for a colic drink, which was administered. He also gave it a pint of rum. His cob recovered from the colic but would not eat. At one of my subsequent visits the carter drew my attention to its tongue. There were a few cuts on the tip; the centre of the ventral surface extending to the frenum was discoloured nearly black, and the dorsal surface was very hard, except at the tip, which was soft. The cheeks were also a little swollen. I had the parts bathed with a weak solution of pot. perman. and ordered drinking water to be constantly in the manger. I examined the horse again on December 4 and found the discolouring had almost gone, the hard part was softening, and the cheeks were going smaller—everything, in my opinion, going on satisfactorily. On the 5th the owner and carter came down with the end of the tongue wrapped in a paper bag. Whilst examining the tongue, it broke away in their hands for a distance of about three inches.

The horse was found dead on Tuesday morning, December 7, 1920.

The owner bought this horse in 1914. It had been in a stable by

itself all the time, except in 1916, when it was turned out to grass for the summer. I made enquiries as to how they had drenched it, and was told that one man held its tongue out with his hand, while the other man poured the medicine down, but beyond that I could get no further history.

V.

Last month a man called at the surgery and said that his horse had colic and he wanted two colic drinks. These were given to him, but I was not asked to see the animal until it had recovered. I found an aged cart horse in fair condition, and after examination advised light work. A few days afterwards he called at the surgery and wanted the teeth attended to, as it was not eating well.

The horse was dressed and sent away. He had not gone far before he became very distressed. Broke out in a sweat, nostrils distended, and breathing very difficult. I found a sub-maxillary gland slightly swollen, and advised the owner to return to my stables with the horse immediately. This he did, but by 3.30 p.m. the same day it was so ill that I had to insert a tracheotomy tube. The tongue now was very large and hard, hanging out of the mouth for about 4 inches; in fact, it completely filled its mouth. It was given oatmeal gruel and milk to drink and had local treatment to the tongue and head, comprising hot fomentation.

Death from slow exhaustion, after about three days' illness.

Post-Mortem Examination.—The substance of the tongue was completely gangrenous, although there were no lesions on the surface and nothing to suggest that it was in such a dreadful state. Whilst rasping its teeth I remarked and said there was a very bad smell from the mouth, and attributed it to decayed teeth. The teeth were quite good and there were no lesions on the gums. The larynx and upper part of the trachea were also affected.

The owner had had this horse about three years. It had worked remarkably well for him, and this was its first sickness.

INJURIES INFLICTED ON A COW BY A SERVICE BULLET.

By J. F. D. TUTT, M.R.C.V.S., F.R.M.S., F.Z.S.
(Winchester).

The cow in question was grazing in a meadow facing the main railway line, and was shot by a soldier in a troop train in motion, at a range of about 17 yards.

The cow was dead on arrival, and I understood dropped immediately it was shot; made ineffectual efforts to rise, and died within twenty minutes.

Externally, there was a bullet wound on the right side between the last two ribs. Crepitation was plainly heard on palpation, and there was a moderate degree of emphysema.

Internally, post-mortem showed that the bullet took a slanting direction, fracturing the last two ribs at their vertebral extremities, puncturing the lung and diaphragm, entering the rumen, going upwards and tearing the right kidney in half, lacerating the posterior aorta and fracturing the spinal column at the first lumbar vertebra (which was shot to pieces), and embedding itself in the subcutaneous fascia on the left side, almost opposite the point of entry on the right side.

Unfortunately for the owner, the cow was one of the best in the herd and had recently had her third calf.

FRACTURE OF THE LEFT HUMERUS IN A BULL. TREATMENT AND RECOVERY.

By J. F. D. TUTT, M.R.C.V.S., F.R.M.S., F.Z.S.
(*Winchester*).

The patient was a valuable pedigree shorthorn yearling bull, and sustained a complete fracture of the left humerus, through coming down heavily in a loose box, on October 1 of last year.

Fractures in this position in cattle and horses are difficult to treat, but as the bull was highly priced, treatment was requested.

Bandaging being out of the question, the fractured bone had to be "set" as well as possible by means of strips of linen laid crosswide under and round the elbow joint, and over across the humerus up to the point of its articulation with the scapula. Several layers were required and adhesives, plaster of paris, gum and starch, were all tried in turn, but proved dismal failures (even when shavings were intermixed), the whole mass falling off in a lump within a few hours.

As a final measure, strips of wood (*i.e.*, shavings) were cut, about 8 to 12 inches in length, and an inch in width, and the skin over the affected regions liberally plastered with glue. The shavings were then glued on as in the case of the previous dressings, and a hard, solid mass built up, this being finally well coated with glue.

The bull was allowed to be loose in the box, and this dressing held until early in November, when it came off in pieces.

Examination showed that the bone had set. Prior to setting, the limb could be rotated easily and crepitation heard several yards distant. The underlying skin was denuded of hair, but otherwise undamaged. At present, the bull walks with a slight limp, but this may in time, I think, become practically negligible.

RENAL CALCULUS IN A BITCH.

By FREDERICK HOBDAY, F.R.C.V.S., and HAROLD STAINTON, F.R.C.V.S.
(*London*).

The subject of this note was the Pekingese bitch whose previous history has already been given on page 89 of the Veterinary Journal for March, 1920.

In August, 1919, she gave birth to one dead puppy and in February, 1920, was operated upon for a cystic calculus. Recovery was uneventful and she enjoyed apparent good health until January 8, 1921, when symptoms appeared quite suddenly.

On this date the owner telephoned up from the country to say that the dog was very ill and " needed a dose " as she was " distended and in abdominal discomfort."

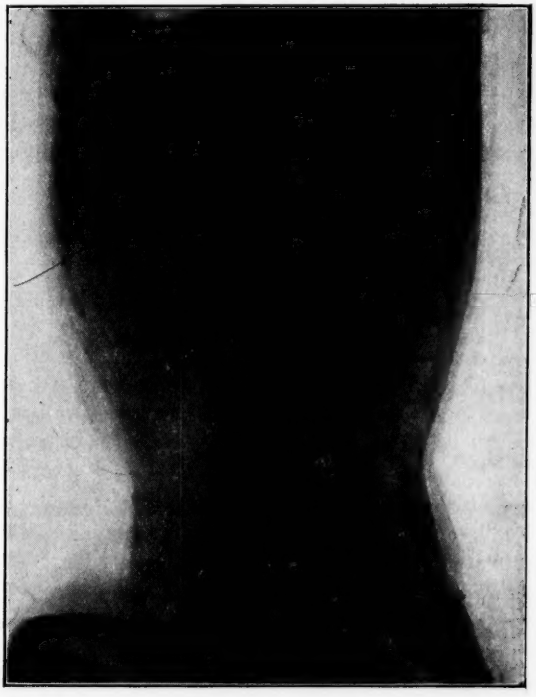
On the following day a further telephone message was received to the effect that although the bowels were acting well, the symptoms did not abate. The latter were, if anything, worse, and the dog appeared to be stiff in the hind quarters and walked with difficulty. The back was arched at times and during the night she had had three violent attacks of pain.

On this sparse evidence one was inclined to suspect spinal neuralgia and treatment was prescribed accordingly.

On January 13—that is, five days after the onset of the above symptoms, an urgent message was received to come down and see the patient as matters were getting worse. The symptoms as related by the owner were—intermittent attacks of pain. The bitch would suddenly jump out of her basket, then wander into the middle of the room and stand or sit for a time. She would gradually drop her head and arch her back, retaining this posture for varying periods. Sometimes in the middle of such a period she would throw her head back with a yelp of pain and become rigid. Passage of urine was quite natural. No pain or tenseness accompanied micturition and the urine was normal in appearance to the naked eye. Appetite was suspended, but occasional interest was shown in such food as rabbit. There was no marked thirst. General condition maintained. The dog was placed on the floor and watched. She crawled about aimlessly, apparently selecting cold spots, such as oilcloth, on which to settle. In this connection, it may be noted that any application of heat to the back was distasteful. This had been tried on the previous assumption of spinal neuralgia.

She would sit for a few minutes in a dejected attitude and there was a curious tendency to slowly droop the head and ease up the hind

quarters. The tail was almost constantly wagging from side to side in a restless fashion. Movement of the hind legs was very cramped, and examination by abdominal palpitation was negative. The muscular wall was quite flaccid and there was no evidence of any tension or sensitiveness. Digital pressure over the lumbar region, however, immediately produced a cry of pain. This, together with



the previous history, led to the suspicion of renal calculus and the owner agreed readily to an examination by Röntgen Ray. Two skiagraphs were taken, one in the dorsal and the other in a lateral position. In this case, a well-defined shadow was only obtained in the lateral position.

Although permission to operate was refused, the case has points of interest as regards its somewhat unclassical train of symptoms.

OBSERVATIONS ON A FATAL EPIDEMIC AMONGST CATS.

By M. WALLACE KERR, M.R.C.V.S.
(*Saffron Walden*).

History.—Cats have been dying off at an alarming rate in this district during a period covering about six months ; isolated farms have lost all or most of their cats and the cause of mortality was regarded at first to be poisoning by gamekeepers and others. This mortality was known to me, but no cats were for some time brought for examination. Cats were dying and being found dead in the town and owners believed they were poisoned. About two months ago the first cat, a great favourite of its owner, came under my attention, and at various intervals up to the time of writing cats have been under my observation and treatment for this disease. The ordinary farm and domestic cat being of little value intrinsically, and veterinary advice unsought in most cases, much information has been lost, but as matters have become serious cat owners have sought veterinary aid for their pets.

Symptoms have been more or less uniform in all cases brought under my notice. The animal suddenly becomes violently sick, vomiting frequently, and there is diarrhœa, salivation, and dribbling from the mouth ; disinclination for company, loss of appetite, surface temperature cold, and rapid general weakness. Breathing rapid at first, gradually becoming shallow and without effort. Heart beat rapid but full pulse ; temperature inclined to be subnormal.

The course of the disease is acute in most cases and if no treatment has been resorted to the animal hides away, preferably in a dark, quiet spot, becoming listless and taking no interest in its surroundings. The eyes become glassy and the eyelids wide open ; the animal appearing blind with a vacant stare. The nose is cold and moist, in some cases sneezing, but no discharge either from nose or eyes. General rapid emaciation in neglected cases and death.

In cats under observation from the outset of the disease the above symptoms have been observed, together with inflammatory lesions in the mouth. The gums in some cases are inflamed, the hard palate has a furred appearance and there is at the back of the throat a certain amount of pharyngitis. In some cases ear trouble has been observed with a discharge from one or both ears ; the outer ear at the base is painful on pressure and resembles canker ; in others no ear symptoms are present.

Differential Diagnosis.—This epidemic might easily be diagnosed as a toxæmia due to bacterial infection or poisoning from arsenic etc. ; as acute gastric enteritis, or as a cerebral affection, from the dull, listless and semi-comatose condition.

It is certainly a very infectious and contagious disease and the cause and origin appear to be unknown.

Therapeutics.—Purely a matter of treatment of symptoms and nursing. I have administered a mild dose of calomel according to the size of the animal, as a powder, on the tongue, followed by

Bismuth Subnitrate	..	gr.1
Cerium Oxalate	..	gr. fs. (P. W. & Co.)

powdered and mixed with milk or other agent and administered thrice daily according to the severity of the case.

Stimulants, *e.g.*, brandy in milk and egg gruel, meat extracts at frequent intervals, the patient being kept warm, preferably by the fire. Cases have recovered in from two to four days where the above treatment was resorted to in the early stages. The patients gradually became better and will take food voluntarily, such as fish, milk, etc., etc. In neglected and acute cases treatment seems hopeless.

Remarks.—This disease appears to be confined to the cat and attacks cats of all ages, but young animals are chieffy affected. All cats on some farms have died from the disease. Out of six cats on one farm four young cats died and two old cats are still hale and hearty and have not contracted the disease. Some fifty cats have died from the disease in one street alone. Complaints have been made to the sanitary authorities of the numbers of unburied cats which have been found thrown into corners in heaps. The colonising and family characteristics of the cat seems to suggest that the mode of infection is by direct contagion, probably by the mouth. The saliva in the early stages seen dribbling from the mouths of cats in the operation of licking themselves, may spread infection through the medium of the saliva.

Post-mortem Appearances.—The lungs show a patchy inflammation in places, a lobular pneumonia, but lung lesions are very variable; there is little exudate in the bronchi; no pleuritis or pericarditis.

Stomach found empty; in some bile and other secretions are found; no appearance suggestive of gastritis or any gastric lesions.

Liver slightly inflamed with gall bladder distended and extravasation of bile in the region of the duct.

Intestines both large and small are found empty, and no enteritis.

Emaciation in most cases and absence of internal fat. Post-mortem in some cases has revealed the abdominal cavity and internal organs laden with fat, but the alimentary canal absolutely empty; and these cases have been pets and well cared for animals which have been attacked by the disease in a virulent form and have died within 48 hours from the onset.

The ears have been found to contain a large quantity of pus and

other deposits resembling canker. Even kittens' ears have been found thus affected where no ear lesions were noticed prior to attack.

The brains have been removed and no cerebral lesions observed. There is, however, an infected condition of the superficial vessels, but no true meningitis.

Research work has been commenced in some quarters with a view to determine the etiology of this disease and one cannot but hope that some practical result will be the outcome.

Abstracts.

USURPATION OF THE TITLE VETERINARY SURGEON.

By MONSIEUR JULES BLIER.

MONSIEUR A. CONTE, in a recent study of professional rights, published by the *Revue Générale le Médécine Vétérinaire* (1) completes the data which he sent to us in 1911 on the practical problem of the usurpation of the title veterinary surgeon. The Court of Appeal, by a decree of June 15, 1914, dissipating the hesitation evinced by certain tribunals " in the appreciation of the conditions of this usurpation," has decided, declares Monsieur A. Conte, that " the empiric who has drawn up his offers in appeals to the public in such a fashion as to lead them to believe that he is in legitimate possession of the title of veterinary surgeon, commits a true usurpation of the title constituting an act of illicit concurrence it is the function of the tribunals to suppress." Since Monsieur A. Conte offers us an occasion for it, it is our duty not to leave mention of this decree of June 15, 1914, without showing thanks to the authority cited in an analogous debate by an illustrious counsel why in fact, in face of the usurpation of the title veterinary surgeon, civil tribunals can evince some hesitation, and why, on the contrary, police court tribunals show none, and above all, how much more from the jurisprudence cited by M. A. Conte, actually more favourable than formerly, we have at our command another juridic arm more powerful still.

When an empiric usurps the title of veterinary surgeon, who are his victims? It is—and unfortunately veterinary surgeons, who always look at themselves from a too corporative point of view, forget to tell it—at first the client who has consulted the empiric and afterwards—our practitioners should proclaim it loudly—the veterinary surgeon who is the object of the disloyal agreement. What does the latter suffer? A prejudice which is his alone; it is exact, but which, in a narrow point, submitted to the impartial examination of a magistrate, does not pass the bounds of private damage and offers no menacing character to society. The hesitation of tribunals formerly, to

which Monsieur A. Conte alludes is explained by this particular prejudice to the veterinary surgeon, for the tribunal knows that anybody, save in case of contagious illness, has the right to attend animals, by virtue of the freedom of labour and in the absence of any law against empiricism. What remains ? A damage indisputable to-day, now that the law is fixed, for usurpation of title, disloyal manœuvre, illicit agreement, only raisable before a civil or trade tribunal, capable of carrying a money reparation with the inconvenience of long legal procedure.

The usurpation of the title constitutes a question of penal right Let us return, in effect, to the first victim, *i.e.*, to the client of the empiric. With whom has he done business ? With a man putting on his door, on his prospectus, or on his letter paper the title of veterinary surgeon. Let us analyse this fact. What is this act, which consists in the assumption of false credit, of an imaginary title, to procure by a lying manœuvre an illusory confidence ? This act, as everybody knows, is a misdemeanour ; those who commit it fill the police courts ; they are swindlers. What is swindling ? It is the art of worming benefits out of other people by flashing about an *imaginary* credit. Let us look at article 405 of the Penal Code, which, strange to say, has never been invoked against the usurpation of our title. The Court of Appeal, in its decree of 1914, besides, makes itself understood :—" The general effect of publicity proceedings (of the empiric) has had for its object and result a *clientèle* which has only come to him by reason of the confidence inspired by the usurped title." If a young man seeking a place sends in his card to an employer, writing under his name " Engineer of Arts and Manufactures," without having put foot in the central school, what is he ? He is a swindler.

When in 1911 a Paris swindler was brought up for extracting large sums of money from Sir Horatius Werner, on the plea that he had made a true diamond chemically, the Court did not discuss the fact as to whether the swindler made a diamond or not, but it examined the contract between the parties and found that the swindler had described himself as an " engineer of mines." This was sufficient ; he had usurped the title. The magistrate was more concerned about protecting society against swindling than about giving satisfaction for a particular wrong in private interests.

Therefore, when the empiric usurps the title of veterinary surgeon, or even simply, as noted by Monsieur Conte, " when the impostor, without saying positively that he is a veterinary surgeon, leads people to *believe by the use he makes of this word* that he really is a veterinary surgeon," there are the constituent elements of a misdemeanour, by imaginary credit and manœuvre for arousing in the public a false confidence.

A question remains to be solved. Who ought to make complaint? Not, in our opinion, the veterinary surgeon wronged, or his syndicate, but precisely the veterinary surgeon who has for his mission the representation of the public authorities, which one rightly calls "la Puissance publique," that is to say, the departmental veterinary surgeon whose complaint, based on exact facts, will not only carry more weight with " le juge d'instruction " because he has not to make clients, his personal interest is not menaced by the empiric, and that he carries to the magistrate concerned in the defence of the public from wrong a guarantee of impartiality always appreciated at the pretorium. For the rest, in virtue of the decision of the Court of Appeal, there remains the resource of civil or commercial proceedings.

Observation shows that if the empiric does not always usurp in writing the title of veterinary surgeon, he always usurps it orally. There is, then, one way to follow—to fight empiricism. In our professional assemblies we constantly hear vows made and demands for laws. Do not demand laws—use those that exist.—*Rev. Gén. de Med. Vet.*

TREATMENT OF FOOT AND MOUTH DISEASE.

M. Bertschy and his son noticed in an epizootic of foot and mouth disease in the Canton of Fribourg, that cattle which drank water conducted by an iron pipe, having a length of at least 20 to 30 metres, only suffered slightly when attacked by the disease, but that where the water supply came through cement, wood, ceramic, or galvanised iron conduits the symptoms of foot and mouth were very severe. This led them to think that iron had a specific effect against the malady. Accordingly Bertschy administered 3 to 5 grammes (47 to 78 grains) per animal of sulphate of iron in the drinking water for a period of four to six weeks. All bovines thus treated only contracted minute lesions, two or three vesicles about the size of a pin's head, and appetite and the milk supply remained unaffected.

The authors also have given a dose of 8 grammes of sulphate of iron in physiological solution as an intravenous injection, but this method was too cumbersome for country practice, so they resorted to subcutaneous injections of cacodylate of iron in doses of 1 gramme dissolved in 50 grammes of distilled water. The results obtained on sick animals treated with cacodylate of iron have been surprising, and the authors intend producing a special work on the subject. The authors call attention to the fact that during the war foods rich in iron were reserved for human food and cattle got a reduced supply, and were consequently in a faulty state to resist infection.

J. Mayr and J. Bohm, commenting on the communication of Bertschy, consider that the good effect of iron in the disease is due to

the oligo dynamic power of metals on bacteria. Süpfle, Streck, Rosenkranz and Nägeli have shown that the heavy metals (copper, mercury and silver) give oligo dynamic properties to water which are sufficient to kill algæ cells, bacteria and protozoa. Mayer considers that the mode of action of the iron is to produce a strong disinfection of the contents of the rumen.

Mayr in 1895 recommended creolin in the complaint. A dose was given in water three or four times a day, and injections of cresyl were given per rectum.

J. Bohm says :—" It has been shown that iron, copper and silver emit bactericide rays, and that water, glasses, wadding, etc., when in contact with radiant bodies, take on radioactive properties."—*Revue Générale de Med. Vet.* G. M.

SUTURE OF A SEVERED GASTROCNEMIUS TENDON.

By FREDERICK HOBDAY, F.R.C.V.S.,
London.

The two photographs illustrate so well the condition of the patient, a terrier dog, eight and a half years old, before and after the operation, that very little descriptive text is necessary.

Fig. 1.—Before operation.

The gastrocnemius tendon was completely ruptured, without any apparent external injury to the skin, as a result of an accident, and when the dog was brought to my notice, any attempt at walking brought the tarsus to the ground as shown in Fig. 1. The rupture in the tendon could be distinctly felt. Under chloroform anæsthesia and antiseptic precautions an incision was made longitudinally just over the ruptured area. The two severed ends were then dissected out, freshened up, laid upon one another, and sutured together with

FIG. 2.—After operation.

kangaroo tendon suture material. The skin was then sutured with silkworm gut in the usual way, and the whole leg placed in a bandage and fixed by the aid of a splint. The bandage was removed and the skin sutures taken out on the eighth day, and, as all appeared to be doing well, the bandage and splint were replaced for another fortnight, when the dressings were all taken off and the dog began to use the leg naturally. For another fortnight or so there was a slight limp, but this eventually passed off, and the leg was used quite as well as the others.

Review.

ANNUAL REPORT OF THE CAMEL SPECIALIST FOR THE YEAR 1919–20.

THE report of the Camel Specialist, Sohawa, for the year 1919–1920 is interesting, and points to the fact that in the treatment of *Surra* the efficacy of the tartar emetic has yet to be established, and so far remains in the experimental stage. A further report will be awaited with interest.

Artificial inoculation proved fatal, as shown by experiments on ponies, dogs, sheep, rabbits, and guinea-pigs; while buffaloes are shown to be immune carriers, which proves they can act as dangerous reservoirs of *Surra*; and as *Tabanidæ* are frequently seen sucking the blood of these animals, buffaloes must not be forgotten as a probable reservoir of the disease.

Captain Cross, the camel specialist, gives a timely warning of the possible shortage of camels, which it is hoped will be looked into by the military authorities.

BACTEROL.

DURING the past twelve months we have submitted samples of this antiseptic and germicide to prolonged and severe tests as a dressing for wounds in the horse, cow, dog, and cat, and the results have been excellent.

It is stated to be a preparation based upon infusions of eucalyptus and Alpine peppermint, combined with formaldehyde and iodine, prepared and modified by special processes at high temperature.

Diluted and used as directed it proved an inexpensive, efficacious, and clean lotion, having the merit of being pleasant to the owner to apply and non-irritating to the smallest and most delicate animal. It is certainly a dressing that will win its way by its own merits to the confidence of the practitioner and only needs to be tried once to be used again and again.

PROPOSED SECOND INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY.

THE proposed Congress of Comparative Pathology, which had been arranged to take place at Rome in April, 1921, has been indefinitely postponed owing to "International" difficulties. The President, our esteemed colleague Professor Perroncito, explains the reason in the following letter :—

Rome, le 24 janvier, 1921.

Au cours de son travail préparatoire le Comité d'organisation a du reconnaître à son vif regret, que méme dans le champ de la science on est encore loin d'avoir rétabli l'entente cordiale qui seule peut assurer le concours de tous les savants qui s'interessent à la Pathologie

comparée ; de manière à rendre utile et profitable un Congrés international.

Notre Comité voyant l'impossibilité de réunir le Congrès au prochain mois d'Avril ; bien décidé d'autre part à persister dans ses efforts tendant à renouer les rapports scientifiques internationaux, sans aucune exclusion, a décidé de remettre le 2ème Congrès international de Pathologie comparée à une époque qu'il espère de pouvoir vous préciser prochainement.

PROF. E. PERRONCITO.

R.A.V.C. OLD COMRADES' ASSOCIATION.

THE above association has now been started and has already proved its value by helping several deserving men and their families who have temporarily fallen on misfortune. The annual subscription of membership, which is only 5s., should be sent to R.S.M. Corr., R.A.V.C., Records Office, Woolwich, S.E., and it is hoped that all who took part in the work of the R.A.V.C. during the Great War, will join up without delay.

The first Reunion Dinner is to be held at 6.30 p.m. on Friday, April 29, at the Café Monico, Regent Street, London. Application for tickets (price 7s. 6d. each) should be made early, as the space is limited and it is surmised that the gathering will be a large one.

Some of the former members of the Lena Ashwell Concert Party, which was so popular in the camps in France, have promised to provide the musical programme, and it may safely be prognosticated that the evening will be a lively one.

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

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